

Notice of Allowability

Application No.

10/056,103

Examiner

Timothy J. Dole

Applicant(s)

SOHN ET AL.

Art Unit

2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE filed December 5, 2006.
2. ☒ The allowed claim(s) is/are 1-7, 11, 12, 15-20, 22, 23, 26-31, 33-35 and 37.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 5, 2006 has been entered.
2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with attorney of record, Eugene Bernard on December 19, 2006.

The application has been amended as follows:

Replace claim 11 with:

A device for sensing and characterizing particles by the Coulter principle, said apparatus comprising:

(a) a conduit formed at least in part by an elastomeric material and through which a liquid suspension of particles to be sensed and characterized can be made to pass, wherein said conduit has an effective electrical impedance which is changed with the passage of each particle therethrough and wherein the conduit has a cross-sectional area of between about 1 μm^2 or less a

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length, in the direction of the passage of the particles, of between about 1 and about 10 micrometers;

(b) a liquid-handling system for causing said liquid suspension of particles to pass through said conduit; and

(c) a measurement system for sensing the change of electrical impedance in said conduit, wherein the measurement system comprises a four-point electrode system having two inner electrodes and two outer electrodes, wherein the inner electrodes control a voltage applied to the conduit, and are positioned external to the conduit, and wherein the outer electrodes inject current into the liquid suspension of particles.

✓
Cancel claim 13.

✓
Cancel claim 14.

Replace claim 22 with:

A method for sensing and characterizing particles by the Coulter principle, said method comprising:

(a) passing a liquid suspension of particles to be sensed and characterized through a conduit formed at least in part by an elastomeric material, wherein said conduit has an effective electrical impedance which is changed with the passage of each particle therethrough and wherein the conduit has a cross-sectional area of less than about $1\text{ }\mu\text{m}^2$ and a length, in the direction of the passage of the particles, of between about 1 and about 10 micrometers; and

(b) monitoring electrical current through or voltage across, said conduit with a four-point electrode system having two inner electrodes and two outer electrodes, wherein the inner electrodes control a voltage applied to the conduit, and are positioned external to the conduit, to

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sense the approach of particles to, the presence and characteristics of particles passing through, or the departure of particles from, said conduit, and wherein the outer electrodes inject current into the liquid suspension of particles.

✓
Cancel claim 24.

✓
Cancel claim 25.

Replace claim 29 with:

A method for sensing and characterizing particles by the Coulter principle, said method comprising:

(a) passing a liquid suspension of particles to be sensed and characterized through a conduit formed at least in part by an elastomeric material, wherein said conduit has an effective electrical impedance which is changed with the passage of each particle therethrough and wherein the conduit has a cross-sectional area of less than about $1\text{ }\mu\text{m}^2$ and a length of less than about $50\text{ }\mu\text{m}$; and

(b) monitoring electrical current through or voltage across, said conduit with a four-point electrode system having two inner electrodes and two outer electrodes, wherein the inner electrodes control a voltage applied to the conduit, and are positioned external to the conduit, to sense the approach of particles to, the presence and characteristics of particles passing through, or the departure of particles from, said conduit, and wherein the outer electrodes inject current into the liquid suspension of particles.

✓
Change "32" to --29-- on line 1 of claim 33.

✓
Cancel claim 32.

✓
Cancel claim 38.

3. The following is an examiner's statement of reasons for allowance: the claims are considered to be allowable due to the inclusion of claim limitations: "a conduit formed at least in part from poly(dimethylsiloxane)...wherein the conduit has a cross-sectional area of less than about $1\text{ }\mu\text{m}^2$ and a length of less than about $10\text{ }\mu\text{m}$...wherein the inner electrodes control a voltage applied to the conduit, and are positioned external to the conduit, and wherein the outer electrodes inject current into the liquid suspension of particles" in claim 1; "a conduit formed at least in part from poly(dimethylsiloxane)...wherein the conduit has a cross-sectional area of less than about $1\text{ }\mu\text{m}^2$ and a length, in the direction of the passage of the particles, of between about 0.1 and about 50 micrometers...wherein the inner electrodes control a voltage applied to the conduit, and are positioned external to the conduit, and wherein the outer electrodes inject current into the liquid suspension of particles" in claim 3; "a conduit formed at least in part by an elastomeric material...wherein the conduit has a cross-sectional area of between about $1\text{ }\mu\text{m}^2$ or less a length, in the direction of the passage of the particles, of between about 1 and about 10 micrometers...wherein the inner electrodes control a voltage applied to the conduit, and are positioned external to the conduit, and wherein the outer electrodes inject current into the liquid suspension of particles" in claims 11 and 22; and "a conduit formed at least in part by an elastomeric material...wherein the conduit has a cross-sectional area of less than about $1\text{ }\mu\text{m}^2$ and a length of less than about $50\text{ }\mu\text{m}$...wherein the inner electrodes control a voltage applied to the conduit, and are positioned external to the conduit, and wherein the outer electrodes inject current into the liquid suspension of particles" in claim 29.

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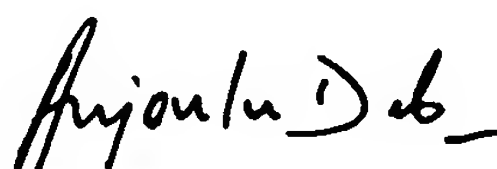
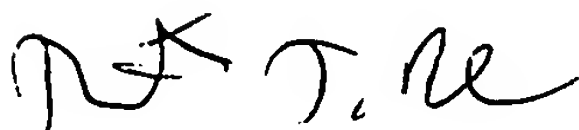
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Dole whose telephone number is (571) 272-2229. The examiner can normally be reached on Mon. thru Fri. from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (571) 272-2168. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TJD



ANJAN DEB
PRIMARY EXAMINER